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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/199,127	11/24/98	ADDIS	M 1633-012B

PMO1/0330
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EXAMINER
GRADY, S

ART UNIT	PAPER NUMBER
3627	

DATE MAILED:

03/30/99

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
09/199,127

Applicant(s)
Addis et al.

Examiner
Steve Grady

Group Art Unit
3627



☐ Responsive to communication(s) filed on _____.

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) 1-28 is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1-28 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been
☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____.

☒ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

— SEE OFFICE ACTION ON THE FOLLOWING PAGES —

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DETAILED ACTION

Drawings

1. This application has been filed with informal drawings which are acceptable for examination purposes only. Formal drawings will be required when the application is allowed.
2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: "25C", line 27, page 19; "32", line 22, page 20. Correction is required.
3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because: reference character "33F" has been used to designate both the cylindrical bore in the packing ring in Figure 8A and one of the six packing rings in Figure 9. Correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 24 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
6. There is an inconsistency between the language in the preamble and certain portions in the body of the claim, thereby making the scope of the claim unclear. The preamble in claim clearly indicate that a subcombination is being claimed, e.g., "a packing ring segment for use in forming a labyrinth seal with a turbine shaft....". This language would lead the examiner to believe that the

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applicant intends to claim only the subcombination of "packing ring segment", the "turbine shaft/rotor" being only functionally recited. This presents no problem as long as the body of the claim also refers to the "turbine shaft/rotor" functionally, such as, "for attachment to said turbine shaft/rotor."

The problem arises when the "turbine shaft/rotor" is positively recited within the body of the claim, such as, "tip portion trimmed to terminate... so as to form a labyrinth seal with said turbine shaft" in lines 20-23; and "each bristle being disposed at an acute angle with respect to the principal plane of said rotor". There is an inconsistency within the claim; the preamble indicates subcombination, while in at least one instance in the body of the claim there is a positive recital of structure indicating that the combination of a "packing ring segment" and "turbine shaft/rotor" are being claimed. The examiner cannot be sure if applicant's intent is to claim merely the "packing ring segment" or the "packing ring segment" in combination with the "turbine shaft/rotor".

Applicant is required to clarify what the claims are intended to be drawn to, i.e., either the "packing ring segment" alone or the combination of the "packing ring segment" and the "turbine shaft/rotor". Applicant should make the language of the claim consistent with applicant's intent. In formulating a rejection on the merits, the examiner is considering that the claims are drawn to the subcombination and the claims will be rejected accordingly. If applicant indicates by amendment that the combination claim is the intention, the language in the preamble should be made consistent with the language in the body of the claims. If the intent is to claim the

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subcombination, then the body of the claims must be amended to remove positive recitation of the combination.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371© of this title before the invention thereof by the applicant for patent.

8. Claims 1-4 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 5,749,584 to Skinner et al. Skinner '584 discloses a brush seal and labyrinth seal segment for rotary machines comprising: a body portion (70) having a longitudinal, vertical, and horizontal extent. See Figures 6 and 9. The body portion (70) has a groove formed along the vertical extent and extending along the longitudinal extent. See lines 53-59, page 6. A plurality of bristles are bound between a pair of plates (56,58) having an incised channel to receive the base end portion of the bristles. See Figure 8. The bristles are trimmed to terminate along a radius of curvature extending along the longitudinal extent of the body portion (70). See Figure 6 and lines 10-11, page 6. The bristles are in a plane substantially parallel to the principal plane of a turbine rotor and extend in the direction of the rotor. See Figure 9 and lines 63-67, page 6, 1-4, page 7. A plurality of brush segments are mounted with the groove of body (70). See Figure 6 and lines 34-37, page 5. The plates (56,58) and channel have a bottom edge with a radius of curvature

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adapted to conform to the radius of curvature of the groove formed in the vertical extend of the body portion. See lines 7-11, page 6. A weld (62) secures the bristles within the channel of plates (56,58). See lines 14-17, page 6. A seal ring is formed when a plurality of brush seal ring segments are placed in a groove formed in the turbine diaphragm. See Figures 4, 6, 9, and lines 34-37, page 5. The combined brush seal and labyrinth seal segment of Skinner '584 can inherently be used to form a tip seal arrangement in a turbine. See lines 36-43, page 1, 7-13, page 5.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 15-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,362,072 to Dalton et al. in view of U.S. Patent No. 5,176,389 to Noone et al. Dalton '072 discloses an elastic fluid turbine comprising: a packing ring (22); a turbine shaft; a diaphragm(16) ; steam directing nozzles (20); a rotor (10); and a plurality of blades (12) bound by a shroud band (14). See Figures 1, 2, 9, and lines 7-18, 62-66, page 1, 29-49, page 2, 28-34, page 4, and 24-29, page 5. The packing ring comprises a horizontal extent, vertical extent, and longitudinal extent. See Figures 2, 4, 9, and 10. The packing ring (22) are disposed in grooves of the diaphragm (16) and nozzle (20), respectively. Both extend circumferentially about the shroud band (14) and

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rotor (10) to form a tip seal and labyrinth seal arrangement. As such, Dalton '072 teaches all of the limitations of the claims except for a segmented seal ring and a plurality of bristles bound between a channel within two plates formed in a groove of the spillstrip ring segment and/or packing ring segment, wherein the bristles segments and plates extend circumferentially along the groove and have the same radius of curvature as the engaging surface of the corresponding turbine component. Noone '389 discloses a segmented brush seal for use in a turbine engine having a plurality of bristles bound within a channel of two plates, extending circumferentially about a rotatable shaft. See Figures 1-3 and lines 50-57, page 2. One skilled in the art at the time the invention was made would have found it obvious to add the segmented brush seal of Noone '389 to a groove formed in the spillstrip ring and/or packing ring of Dalton '549, and have a plurality of segments form the ring, as taught by Noone '389, in order to allow for easy installation of the sealing rings, and provide a sealing arrangement that flexibly bears against a rotatable surface, thereby limiting or preventing fluid flow over the rotatable surface. See lines 62-68, page 4, 21-31, page 1.

11. Claims 5-14, 20-23, and 27-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,362,072 to Dalton et al. in view of U.S. Patent No. 5,176,389 to Noone et al., and further in view of U.S. Patent No. 5,509,780 to Synfelt. Dalton '072 discloses an elastic fluid turbine comprising: a packing ring (22); a turbine shaft; a diaphragm(16) ; steam directing nozzles (20); a rotor (10); and a plurality of blades (12) bound by a shroud band (14). See Figures 1, 2, 9, and lines 7-18, 62-66, page 1, 29-49, page 2, 28-34, page 4, and 24-29, page 5.

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The packing ring comprises a horizontal extent, vertical extent, and longitudinal extent. See Figures 2, 4, 9, and 10. The packing ring (22) are disposed in grooves of the diaphragm (16) and nozzle (20), respectively. Both extend circumferentially about the shroud band (14) and rotor (10) to form a tip seal and labyrinth seal arrangement. The packing ring segments have inner arcuate portions with seal teeth and outwardly facing arcuate surfaces extending radially along the direction of the rotor. The neck (30) of the packing ring is positioned between the inner arcuate portion and the outwardly facing arcuate portion of the packing ring. The packing ring (22) is small than the inner arcuate teether portion, and is positioned between shoulders, such that the inner and outer arcuate portions have a large clearance position and a small clearance position, as illustrated by Figure 2. As such, Dalton '072 teaches all of the limitations of the claims except for a segmented seal ring and a plurality of bristles bound between a channel within two plates formed in a groove of the spillstrip ring segment and/or packing ring segment, wherein the bristles segments and plates extend circumferentially along the groove and have the same radius of curvature as the engaging surface of the corresponding turbine component. Noone '389 discloses a segmented brush seal for use in a turbine engine having a plurality of bristles bound within a channel of two plates, extending circumferentially about a rotatable shaft. See Figures 1-3 and lines 50-57, page 2. One skilled in the art at the time the invention was made would have found it obvious to add the segmented brush seal of Noone '389 to a groove formed in the spillstrip ring and/or packing ring of Dalton '549, and have a plurality of segments form the ring, as taught by Noone '389, in order to allow for easy installation of the sealing rings, and provide a sealing

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arrangement that flexibly bears against a rotatable surface, thereby limiting or preventing fluid flow over the rotatable surface. See lines 62-68, page 4, 21-31, page 1.

Dalton '072, as modified, teaches all of the limitations of the claims except for a radial positioning means comprising a flat spring with one end positioned in a groove of the ring segments. Synfelt '780 discloses a radial positioning means comprising a flat spring (72a) with one end (75a) positioned in a groove of the ring segments (32a). One skilled in the art at the time the invention was made would have found it obvious to add a radial positioning means to the packing ring segments of Dalton '340, as modified, as taught by Synfelt '780, in order to bias the segment for inward radial movement to create a tight seal/turbulent steam flow path between the teeth of the ring segment and the rotor. See col. 8, lines 2-17 of Synfelt '780.

12. Claims 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,487,549 to Dalton et al. in view of U.S. Patent No. 5,176,389 to Noone et al., and further in view of U.S. Patent No. 5,316,318 to Veau. Dalton '549, as modified by Noone '389, teaches all of the limitations of the claims except for a teaching that each bristle is disposed at an acute angle with respect to the principal plane of the rotor. Veau '318 discloses an annular brush gasket comprising a plurality of bristles bound between two plates wherein each bristle is disposed at an acute angle with respect to the principal plane of a rotor. See Figures 1, 2A, 2B, and lines 9-13, page 3. One skilled in the art at the time the invention was made would have found it obvious to place the bristles of Dalton '340 at an acute angle, rather than vertical, as disclosed by Veau '318, in order to limit the wear of the bristle segments. See lines 38-42, page 4.

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Double Patenting

13. Claims 1-4, 15-19, and 21-26 of this application conflict with claims 16-19, 26-30, and 46-48 of Application No. 08/891,526. 37 CFR 1.78(b) provides that when two or more applications filed by the same applicant contain conflicting claims, elimination of such claims from all but one application may be required in the absence of good and sufficient reason for their retention during pendency in more than one application. Applicant is required to either cancel the conflicting claims from all but one application or maintain a clear line of demarcation between the applications. See MPEP § 822.

14. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

15. Claims 1-4, 15-19, and 24-26 are provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 16-19, 26-30, and 46-48 of copending Application No.

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08/891,526. This is a provisional double patenting rejection since the conflicting claims have not in fact been patented.

16. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321© may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

17. Claims 1-4, and 15-19 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-12 of U.S. Patent No. 5,547,340 to Dalton et al. in view of U.S. Patent No. 5,176,389 to Noone et al. Dalton '340 teaches all of the limitations of the claims except for a plurality of bristles bound between a channel within two

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plates formed in a groove of the spillstrip ring segment and/or packing ring segment, wherein the bristles segments and plates extend circumferentially along the groove and have the same radius of curvature as the as the engaging surface of the corresponding turbine component. U.S. Patent No. 5,176,389 to Noone et al. discloses a segmented brush seal for use in a turbine engine having a plurality of bristles bound within a channel of two plates, extending circumferentially about a rotatable shaft. See Figures 1-3 and lines 50-57, page 2. One skilled in the art at the time the invention was made would have found it obvious to add the segmented brush seal of Noone '389 to a groove formed in the spillstrip ring and/or packing ring of Dalton '340 in order to provide a sealing arrangement that flexibly bears against a rotatable surface, thereby limiting or preventing fluid flow over the rotatable surface. See lines 21-31, page 1.

18. Claims 24-26 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-12 of U.S. Patent No. 5,547,340 to Dalton et al. in view of U.S. Patent No. 5,176,389 to Noone et al., and further in view of U.S. Patent No.

5,316,318 to Veau. Dalton '340, as modified by Noone '389, teaches all of the limitations of the claims except for a teaching that each bristle is disposed at an acute angle with respect to the principal plane of the rotor. Veau '318 discloses an annular brush gasket comprising a plurality of bristles bound between two plates wherein each bristle is disposed at an acute angle with respect to the principal plane of a rotor. See Figures 1, 2A, 2B, and lines 9-13, page 3. One skilled in the art at the time the invention was made would have found it obvious to place the bristles of Dalton

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'340 at an acute angle, rather than vertical, as disclosed by Veau '318, in order to limit the wear of the bristle segments. See lines 38-42, page 4.

19. Claims 5-14, 20-23, and 27-28 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-12 of U.S. Patent No. 5,547,340 to Dalton et al. in view of U.S. Patent No. 5,176,389 to Noone et al, and further in view of U.S. Patent No. 5,509,780 to Synfelt. Dalton '340 teaches all of the limitations of the claims except for a plurality of bristles bound between a channel within two plates formed in a groove of the spillstrip ring segment and/or packing ring segment, wherein the bristles segments and plates extend circumferentially along the groove and have the same radius of curvature as the as the engaging surface of the corresponding turbine component. U.S. Patent No. 5,176,389 to Noone et al. discloses a segmented brush seal for use in a turbine engine having a plurality of bristles bound within a channel of two plates, extending circumferentially about a rotatable shaft. See Figures 1-3 and lines 50-57, page 2. One skilled in the art at the time the invention was made would have found it obvious to add the segmented brush seal of Noone '389 to a groove formed in the spillstrip ring and/or packing ring of Dalton '340 in order to provide a sealing arrangement that flexibly bears against a rotatable surface, thereby limiting or preventing fluid flow over the rotatable surface. See lines 21-31, page 1.

Dalton '340, as modified, teaches all of the limitations of the claims except for a radial positioning means comprising a flat spring with one end positioned in a groove of the ring segments. Synfelt '780 discloses a radial positioning means comprising a flat spring (72a) with

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one end (75a) positioned in a groove of the ring segments (32a). One skilled in the art at the time the invention was made would have found it obvious to add a radial positioning means to the packing ring segments of Dalton '340, as modified, as taught by Synfelt '780, in order to bias the segment for inward radial movement to create a tight seal/turbulent steam flow path between the teeth of the ring segment and the rotor. See col. 8, lines 2-17.

Conclusion

20. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: U.S. Patent Nos. 5,810,365 to Brandon, 5,603,510 to Sanders, 5,395,124 to Brandon, 2,600,991 to Hargrove, 4,436,311 to Brandon, and UK Patent No. 2301635 to Hemsley et al. are cited to show related radial positioning means comprising coil springs and flat springs.

21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steve Grady whose telephone number is (703) 305-0035. The examiner can normally be reached on Monday-Fridays from 7:00 am to 3:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Meyers, can be reached at (703) 308-3868.

Submission of your response by facsimile transmission is encouraged. Group 3620's facsimile number is (703) 305-3597. Recognizing the fact that reducing cycle time in the processing and examination of patent applications will effectively increase a patent's term, it is to your benefit to submit responses by facsimile transmission whenever permissible. Such submission will place the response directly in our examining group's hands and will eliminate Post

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Office processing and delivery time as well as the PTO's mail room processing and delivery time.

For a complete list of correspondence not permitted by facsimile transmission, see MPEP 502.01.

In general, most responses and/or amendments not requiring a fee, as well as those requiring a fee but charging such fee to a deposit account, can be submitted by facsimile transmission.

Responses requiring a fee which applicant is paying by check **should not be** submitted by facsimile transmission separately from the check.

Responses submitted by facsimile transmission should include a Certificate of Transmission (MPEP 512). The following is an example of the format the certification might take:

I hereby certify that this correspondence is being facsimile transmitted to the Patent and Trademark Office (Fax No. (703) 305-3597) on _____ (Date)

(Typed or printed name of person signing this certificate)

(Signature)

If your response is submitted by facsimile transmission, you are hereby reminded that the original should be retained as evidence of authenticity (37 CFR 1.4 and MPEP 502.02). Please do not separately mail the original or another copy unless required by the Patent and Trademark Office. Submission of the original response or a follow-up copy of the response after your response has been transmitted by facsimile will only cause further unnecessary delays in the

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processing of your application; duplicate responses where fees are charged to a deposit account may result in those fees being charged twice.

Communications via Internet e-mail regarding this application, other than those under 35 U.S.C. 132 or which otherwise require a signature, may be used by the applicant and should be directed to steven.meyers@uspto.gov.

All internet e-mail communications will be made of record in the application file. PTO employees do not engage in Internet communications where there exists a possibility that sensitive information could be identified or exchanged unless the record includes a properly signed express waiver of the confidentiality requirements of 35 U.S.C. 122. This is more clearly set forth in the Interim Internet Usage Policy published in the Official Gazette of the Patent and Trademark on February 25, 1997 at 1195 OG 89.

Any inquiry of a general nature relating to the status of this application should be directed to the group receptionist at (703) 308-2168.

Steve Grady

March 25, 1999


Steven Meyers
Supervisory Patent Examiner
Group 3600